RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603205F Flight Vehicle Technology

	COST ($ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	6,369	5,960	2,445	500	436	0	0	Continuing	TBD
632978	Flight Vehicle Technologies	4,682	4,599	1,796	266	268	0	0	Continuing	TBD
634398	Air Base Technology	1,687	1,361	649	234	168	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

Note: This program element (PE) will be eliminated in FY 2004 and the ongoing technical programs in Project 632978 will be transferred to PE 0603245F, Flight Vehicle Technology Integration, Project 632568, Flight Vehicle Technology Integration and the ongoing programs in 634398 will transferred to 0603112F, Advanced Materials for Weapon Systems, Project 633946, Materials Transition.

(U) A. Mission Description

This program develops and demonstrates advanced aerospace vehicle subsystems, aerodynamic/flight controls, and vehicle-pilot interface technologies for improved aerospace vehicle performance, decreased vulnerability, and reduced logistics support. This program also demonstrates technologies for fixed and bare base assets, including airfield pavements, energy systems, air base survivability, air base recovery, protective systems, fire protection, and crash rescue.

(U) B. Budget Activity Justification

This program is in the Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for existing aerospace vehicle system upgrades and/or new system developments that have military utility and address warfighter needs.

(U) C. Program Change Summary ($ in Thousands)

		FY 1999	FY 2000	FY 2001	Total Cost
(U)	Previous President's Budget (FY 2000 PBR)	7,007	5,992	4,258	
(U)	Appropriated Value	7,035	5,992		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-28			
	b. Small Business Innovative Research	-212			
	c. Omnibus or Other Above Threshold Reprogram		-32		
	d. Below Threshold Reprogram	-391			

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	February 2000
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603205F Flight Vehicle Technology

(U) C. Program Change Summary ($ in Thousands) Continued

		FY 1999	FY 2000	FY 2001	Total Cost
	e. Rescissions	-35			
	f. Other				
(U)	Adjustments to Budget Years Since FY 2000 PBR			-1,813	
(U)	Current Budget Submit/FY 2001 PBR	6,369	5,960	2,445	TBD

(U) Significant Program Changes:

Changes to this program since the previous President's Budget are due to higher priorities within the Science and Technology (S&T) Program.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603205F Flight Vehicle Technology

PROJECT: 632978

COST ($ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
632978 Flight Vehicle Technologies	4,682	4,599	1,796	266	268	0	0	Continuing	TBD

(U) A. Mission Description

This program develops and demonstrates advanced manned and unmanned aerospace flight controls, and vehicle-pilot interface technologies for improved aerospace vehicle performance, decreased vulnerability, and reduced logistics support.

(U) FY 1999 ($ in Thousands)

(U) $1,929 Developed technologies for automatic in-flight replanning for the cockpit to reduce pilot workload. These benefits will be seen in future aerospace vehicle designs and technologies.

(U) $973 Developed algorithms for multiple ship integrated control strategies to enable the safe and effective cooperative employment of manned and unmanned strike aerospace vehicles for air combat operations.

(U) $1,780 Developed advanced integrated aerospace vehicle subsystems to provide increased performance and decreased vulnerability while decreasing both cost and logistic supportability requirements. Fabricated flight critical stabilator actuator to demonstrate operational and military utility.

(U) $4,682 Total

(U) FY 2000 ($ in Thousands)

(U) $2,184 Develop technologies for automatic in-flight replanning for the cockpit to reduce pilot workload. Begin testing autonomous unmanned combat air vehicles systems for automatic in-flight replanning.

(U) $854 Develop algorithms for multiple ship integrated control strategies to enable the safe and effective cooperative employment of manned and unmanned strike aerospace vehicles for air combat operations. Begin integrated control system testing of advanced flight control algorithms.

(U) $1,561 Develop advanced integrated aerospace vehicle subsystems to provide increased performance and decreased vulnerability while decreasing both cost and logistic supportability requirements. Start ground demonstration of a nacelle ballistic fire suppression concept. Continue flight critical stabilator actuator test to demonstrate operational military and utility.

(U) $4,599 Total

(U) FY 2001 ($ in Thousands)

(U) $208 Continue development of aerospace vehicle air-to-air collision avoidance technologies to increase tactics flexibility and increase aerospace vehicle survivability. Continue development of air collision avoidance technologies previously developed and simulated for a limited number of manned aircraft and Unmanned Air Vehicles (UAVs) to larger flights of UAVs. Initiate integration of the auto air collision avoidance algorithms into vehicle management systems architecture and validate in a laboratory environment.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 03 - Advanced Technology Development	PE NUMBER AND TITLE 0603205F Flight Vehicle Technology	PROJECT 632978

(U) A. Mission Description Continued

(U) FY 2001 ($ in Thousands) Continued

(U)	$533	Demonstrate optical control technologies to integrate power and control systems to significantly decrease system volume and weight and to eliminate electromagnetic interference problems in air vehicle control systems. Conduct physical system ground demonstration of optical control technologies.
(U)	$1,055	Develop advanced concepts for engine nacelle ballistic impact fire suppression to increase survivability, while decreasing both cost and logistics support requirements. Complete ground demonstration of nacelle ballistic fire suppression concepts.
(U)	$1,796	Total

(U) B. Project Change Summary

Not Applicable.

(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:
(U) PE 0602201F, Aerospace Flight Dynamics
(U) PE 0603216F, Aerospace Propulsion and Power.
(U) PE 0603245F, Flight Vehicle Technology Integration.
(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 03 - Advanced Technology Development

PE NUMBER AND TITLE: 0603205F Flight Vehicle Technology

PROJECT: 634398

COST ($ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
634398 Air Base Technology	1,687	1,361	649	234	168	0	0	Continuing	TBD

(U) A. Mission Description

This project develops technologies for fixed and bare base operations, including airfield pavements, energy systems, air base survivability, air base recovery, protective systems, airfield fire protection, and crash rescue.

(U) FY 1999 ($ in Thousands)

(U) $601 Developed aircraft and air base fire fighting and power generation technologies including clean, environmentally safe fire fighting agents, equipment, personnel protective clothing, fire risk assessment techniques, and fire fighter training systems.

(U) $929 Developed technologies, utilities, and shelters that improve air base operations. These technologies include completion of the acoustic cycle heat pump that reduces airlift requirements in support of Air Expeditionary Force (AEF) operations rapid deployment.

(U) $157 Constructed an air transportable shelter advanced development model for field testing to support AEF operations rapid deployment.

(U) $1,687 Total

(U) FY 2000 ($ in Thousands)

(U) $621 Develop aircraft and air base fire fighting and power generation technologies to improve fire fighting rescue. Test fire fighting agents and equipment. Develop protective clothing, fire risk assessment technologies, and fire fighting training systems.

(U) $360 Develop technologies, utilities, and shelters that improve air base operations. These technologies include completion of the acoustic cycle heat pump that reduces airlift requirements in support of AEF operations rapid deployment.

(U) $380 Construct an air transportable shelter advanced development model for field testing to support AEF operations. Begin laboratory tesing of advanced lightweight shelter components.

(U) $1,361 Total

(U) FY 2001 ($ in Thousands)

(U) $278 Develop aircraft and air base fire fighting and power generation technologies to improve fire fighting rescue. Test safe fire fighting agents. Contoinue development of protective fire fighting clothing and fire risk assessment technologies. Evaluate new fire fighting training concepts.

(U) $181 Develop technologies, utilities, and shelters that improve air base operations. Complete the acoustic cycle heat pump technology demonstration that reduces airlift requirements in support of AEF operations rapid deployment.

(U) $190 Construct an air transportable shelter advanced development model for field testing to support AEF operations rapid deployment.

(U) $649 Total

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)	DATE
	February 2000

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
03 - Advanced Technology Development	0603205F Flight Vehicle Technology	634398

(U) B. Project Change Summary

Not Applicable.

(U) C. Other Program Funding Summary ($ in Thousands)

(U) Related Activities:

(U) PE 0602201F, Aerospace Flight Dynamics

(U) PE 0603307F, Air Base Operability Advanced Technology Development.

(U) PE 0603231F, Crew Systems and Personnel Protection Technology.

(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.

(U) E. Schedule Profile

(U) Not Applicable.